
VICTORIA DESIGN GROUP LTD
Consulting Civil & Structural Engineers

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**STRUCTURAL APPRAISAL
OF**

HOUSE & BUILDINGS AT

Wood Edge,
Aukside,
Middleton in Teesdale

FOR MR. & MRS. T. CLARK

Project No.: 2021-167
Date: June 2021

Structural Appraisal: House and buildings at Wood Edge, Aukside,
Middleton in Teesdale

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1.0 Introduction

- 1.1 On the instructions of Mr & Mrs Clark and their agent Colling Morris Architectural Services, a structural appraisal was carried out at the above property on Tuesday 18th May 2021.
- 1.2 The purpose of the appraisal was to assess the structural condition of the house and adjoining buildings as part of a planning application to reinstate the dwelling and incorporate the buildings into the house.
- 1.3 The range of buildings is visible on this site on the 1859 OS map of the area, and the date stone above the front door of the house reads 1832, so it is considered likely that the full range of buildings were constructed at the same time.
- 1.4 Our report should be read in conjunction with Colling Morris Architectural Services drawings for the project.
- 1.5 This report is based on a visual inspection of relevant and readily accessible areas of the property only, carried out from ground level externally and internally.
- 1.6 This report comprises a structural survey only and does not cover specialist areas such as timber, damp or drainage surveys.

2.0 Findings

2.1 Generally

- 2.1.1 The subject buildings form an existing house and a range of redundant agricultural / storage buildings of stone construction. The house is two storey under a duo-pitched slated roof, with a flat roofed section to the rear. The buildings are single storey under duo-pitched roofs (now mainly lost), adjoining the two storey dwelling. The site is slightly sloping but the buildings are set well within the property curtilage and are accessed via a gravelled lane from the road.
- 2.1.2 The house has clearly been empty for some time and the associated buildings may be generally described as redundant, although evidence remains of them having been used as ad-hoc storage until the roofs collapsed.
- 2.1.3 It seems likely that no alterations have been made to the external fabric of the house building in their recent history, although we are advised by the current owners (not our clients) that the roofs of what are proposed to be the kitchen and hall / bedroom 3 collapsed in 2019 and 2020 respectively. The flat roofed section to the rear of the house is likely due to creating a first floor level within what was originally a cat-slide roof.
- 2.1.4 For the purpose of reporting, the parts of the buildings will be described by their future uses, as noted on the architectural drawings.
- 2.1.5 Areas of recommended rebuild are noted on our appended sketches.

2.2 External Observations

- 2.2.1 The original house will form the snug and utility with bedrooms 1 and 2 above. The front, south facing elevation has a single window at ground and first floor levels, with stone lintels and cills, with the front door opening being more decorative, including stone jambs and carved into the lintel reads “AT 1832”. The front elevation is of coursed, dressed stonework with generous quoins to the returns. The rest of the house is of more random, rubble stonework, but again the openings to the rear elevation have stone lintels and cills. Whilst it is our assumption that the first floor to the rear (forming what will be bedroom 2 and the bathroom) was formed by building out from an original cat-slide, there is no remaining evidence in the stonework to support this theory. There are two distinct lines of flue staining to the western gable, indicating where fire places have been in use, however against the rear corner is a small amount of cracking which coincides with a gully. The front and rear elevations and the western gable are reasonably pointed, plumb and generally free from structural defects, aside from the small area noted above. The ridge line of the house undulates slightly, but the eaves line remains to be relatively level, with the planes of the roof also being level and no slipped or broken slates were noted. Part of the flat roof to the rear of the property however, has failed, having fallen inwards most likely due to the deterioration of a felt covering and subsequent wet rot of the timbers following prolonged rainwater ingress. The side of this “outrigger” has a considerable outward lean at first floor level and a large part of the outer leaf of stonework has collapsed into the adjoining building.
- 2.2.2 The single storey building which adjoins the house is to become the kitchen and dining area. We are advised that its roof collapsed inwards in 2019, with all of the stone slates and timbers remaining where they fell. There are stone lintels over the two windows and pedestrian door openings to the front elevation, with that against the house being granite. Whilst the elevation has a slight outward lean, which is at its most onerous at eaves level, given the failure of the roof, this is not as severe as it might otherwise have been and is a testament to the quality of the building. The rear elevation forms a partial retaining wall with the field behind and that mass likely acted as a buttress, minimizing lateral movement during the failure of the roof.
- 2.2.3 The second single storey building is to become the hall and bedroom 3. We are advised that this roof fell inwards last winter, again with the stone slates and timbers remaining where they fell. It too has two windows and a single pedestrian door in the front elevation, with stone lintels and cills. Part of a downspout remains fixed to the front wall, suggesting that rainwater goods had originally been provided to the building, but the deterioration of the mortar joints at the bottom of the downspout would indicate that maintenance has been lacking for some time. The head of the rear wall has clearly suffered far more deterioration during the roof collapse – perhaps with less retained earth behind, it was not offered the same stability. Whilst there is no associated lean on the wall, the head

of the wall will require consolidating. The dividing gable wall between these two buildings where their roofs have collapsed, remains in situ and for the time being at least, it is plumb.

- 2.2.4 The third building in the range has a duo-pitched sheeted roof over, with the front elevation dominated by a large, sliding door opening. The front and rear elevations are plumb and free from structural defects and also benefit from rainwater goods to both roof pitches. The gable wall has two rows of flag through stones, and generous quoins to the returns. The roof sheets have been pinned to the gable wall and the elevation is almost flush pointed.

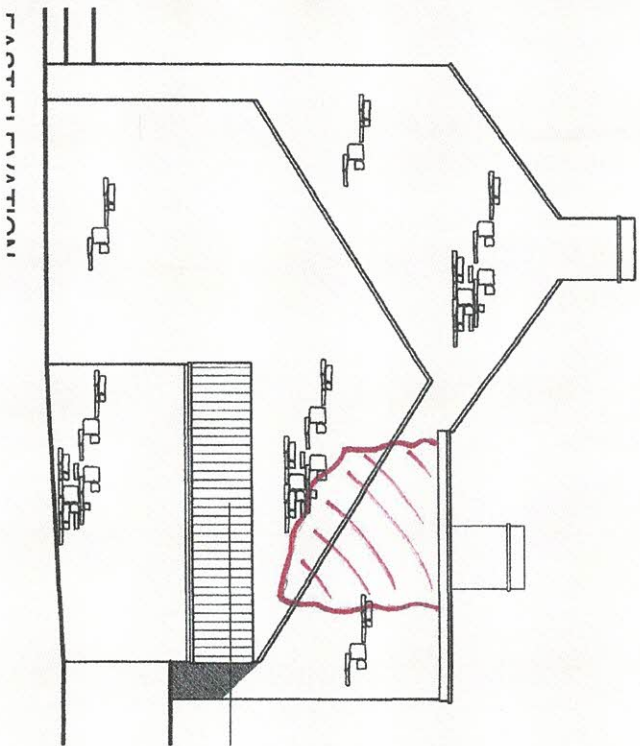
2.3 Internal Observations

- 2.3.1 The existing house roof structure was not visible at the time of our inspection, however the remaining integrity noted externally and the apparent lack of rainwater ingress visible internally would suggest that the existing roof structure is serving its purpose. This is in stark contrast to the flat roof to the rear where rainwater ingress has resulted in part of the roof having fallen inwards. There are no cracks or deformations noted internally which would suggest any shortcomings in the external or internal walls.
- 2.3.2 The first floor is supported on timber joists. Whilst that over the proposed snug / office remains to be dry, that over the rear half of the building has been damaged by wet rot following the partial collapse of the roof above.
- 2.3.3 The roof over the two middle buildings in the row appeared to have been supported on two purlins per pitch with a ridge purlin at the apex, bearing onto a timber truss at mid span. Many of those timbers have failed catastrophically, either from wet rot, or from the resulting forces due to the collapse of the roofs. Access into these buildings was impossible due to the roof timbers and slates which remain within.
- 2.3.4 The profile sheets over the end building are supported on 3 timber purlins per pitch with a pair of ridge purlins at the apex. In turn, these bear onto the gable walls and onto a timber, closed collar truss at mid span. The stonework to this building, especially to the internal aspect is of particularly high quality, with no evidence of the perpendicular panels having separated.
- 2.3.5 The ground floor of the house and the end building are of concrete, ground bearing slabs. It is anticipated that the two centre buildings will be the same, however this could not be confirmed at the time of our inspection.

3.0 Conclusions and Recommendations

- 3.10 From the findings summarized previously it is apparent that generally the buildings on this site have really only been significantly deteriorated by the failure of the roof structures. Despite these failures, the external walls remain to be in good condition on the whole, aside from the area of collapse to the outrigger of the original house. There has clearly been maintenance work undertaken relatively recently, with the end building having benefitted from having been re-roofed and the whole range of buildings being well pointed.
- 3.11 There are two primary areas of masonry where some rebuilding works will be required. The collapse of the outer leaf stonework to the outrigger at the rear of the house will most likely have occurred when the adjoining roof failed and the falling purlins will have exerted a levering action on the masonry. Whilst a lack of through stones is not usually beneficial, in this case, it has retained a degree of integrity to the house as the inner leaf remains in place. Nonetheless, it is generally considered impractical to rebuild one leaf of stonework and to that end, we would anticipate that an area of some 6m² would need to be rebuilt above first floor level. (see Sk-1). The other area where some rebuilding works will be required is the rear elevation of what will be bedroom 3 and its ensuite. The outward rotation of the wall will have been most likely induced by the failing roof structure spreading outwards and its collapse will have also affected the head of the wall. We would anticipate the stonework will need rebuilding for the upper 1m of this building (see Sk-2).
- 3.12 It is extremely unlikely that any of the roof timbers from the two collapsed roofs will be suitable for retention in any load bearing capacity. The roofs should therefore be reinstated off steel purlins (which could span across each part of the building, supported off the remaining internal walls) or timber purlins supported on timber trusses. The roof to the outrigger will also need to be reinstated, with joists spanning from the internal wall out to the rear elevation and weather proofed with a GRP finish. Whilst the timbers to the roof over what will be the sitting room are free from defects, it is unlikely that they will be adequate to support the load of insulated profile sheets. With the glazed gable, we would recommend a steel ridge beam spanning from the living room wall out to a steel frame around the opening.
- 3.13 The timber first floor to the house is generally considered to be adequate for retention to the front half of the building, but that to the rear will have been damaged by rainwater ingress from the failed roof above. Allowance should therefore be made for a new first floor in this area.
- 3.14 The existing stone lintels, given their modest span may be retained, but those timber lintels to the internal aspects should be replaced by suitably designed concrete or steel sections.

- 3.15 The small area of cracking to the rear corner of the western gable would warrant some further exploration and whilst it is not considered to be significant, with the position of the cracking coinciding with a surface water gully, it is possible that some remedial drainage works will be called for.
- 3.16 We would consider that the external walls would benefit from being repointed with a suitable lime-based mortar. Not all walls would require fully repointing, but the more exposed elevations, particularly the western gable, should be prioritized.
- 3.17 Whilst there is little to suggest any shortcomings in the substructure of any of the buildings, we would recommend the excavation of trial holes to establish the formation level of the existing foundations. This will require exposing not only to confirm compliance with current Building Regulations, but also to ensure that there is sufficient depth below ground level to accommodate a new insulated ground bearing slab. Any shortcomings will need addressing by means of underpinning.



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Client

MR & MRS T. CLARK

Project

WOOD EDGE,
 AVONIDE

Title

APPROX AREA OF REQUIRED
 TO EAST GARAGE OF HOUSE

Drawn	LW	Checked		Drawing number	2021-16715K-1
Date	June '21	Date			
Scale	1:100 @ A4				

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Project

WOOD GORE,
AUKSIDE

Title

APPROX AREA OF REBUILD
TO REAR ELEVATION

Drawn LJS	Checked	Drawing number
Date June 21	Date	2021-167/Sk-2
Scale 1:100	GA4	

